

# PATENT SPECIFICATION

783,436

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## COMPLETE SPECIFICATION.

### Improvements relating to Liquid Spraying Machines.

We, FOUR OAKS SPRAYING MACHINE COMPANY LIMITED, a Registered British Company, of Four Oaks Works, Belwell Lane, Sutton Coldfield, Warwickshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a liquid spraying machine of the type in which a storage tank, mounted on a tractor vehicle, or on a trailer to be coupled to a tractor vehicle, has a pump, which is either motorised or adapted to be driven for example by a power take-off from the vehicle, in order that when the tank is charged liquid can be pumped and dispensed through spraying means associated with the vehicle. Such a machine can be used for agricultural, horticultural, pest control, and lime washing purposes.

The object of the present invention is to provide such a machine with compact, simple and inexpensive means by which spraying operations can be conducted with ease at places remote from the machine.

According to the present invention a liquid spraying machine of the kind referred to, comprises a hose reel having a hub which is rotatably mounted on a tubular axle arranged preferably above the tank and in communication with the output side of said pump, the said axle having an outlet communicating with the bore of said hub and a hose pipe connection on said hubs.

Preferably, the axle is supported on a horizontal axis above the tank and mounts independent coaxial hose reels each of which is in separate communication with the pump. In either case the hub is rotatably mounted in a leak-proof manner on the hollow axle. The bore of each hub is provided inter-

mediate its ends with an annular pocket arranged to form a bath, this pocket being in communication with a hose connection on the exterior of the hub.

A spraying machine provided with two hose reels according to the invention is illustrated, by way of example, on the accompanying drawing wherein:—

Fig. 1 is a general arrangement of the invention as seen from the rear of a conventional tractor, the Figure indicating diagrammatically how spraying operations are carried out simultaneously at both sides of the tractor.

Fig. 2 is a longitudinal sectional elevation drawn to a larger scale of the hollow axle and reels.

Fig. 3 is a diagrammatic side view of a part of Fig. 1 to a larger scale.

As will be seen from the drawing, a tractor vehicle 1 mounts a storage tank 2 for containing spraying liquid of any kind. A pump 3 for pumping from the tank 2 via the pipe 2a (Fig. 3) is arranged to be driven from a power take-off on the vehicle, the output side of the pump being in communication by means of pipes 4, 5 with a tubular axle 6. The latter is supported on a horizontal axis above the tank 1 by fore and aft uprights 7 rigidly ascending from opposite sides of the tractor chassis. Two hose reels 9 are mounted coaxially on the axle 6 by means of their hubs 10. The bore of each hub 10 have leak proof joints at 11 with the exterior of the axle 6. Conveniently, the sides of each reel have a plug and socket connection 12, 13 with the ends 15 of its hub 10, the axial displacement of the reels being prevented by sleeve abutments 14, 14a.

The bore of each hub 10 is provided intermediate of its ends 15 with an annular pocket 16 (Fig. 2) adapted to form a bath,

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the said ends 15 and the bore of the plugs 12 providing the axle bearings of the reel. This pocket 16 is in communication with an outlet hole 17 in the wall of the tubular axle 6 and the exterior of the hub 10 has a tubular stump 18 for connection to an end of a hose pipe 19 to be wound on and off the reel.

The ends of the axle 6 have lateral extending members 20 adapted to form hose pipe supports, these supports 20 being capable of being brought into and out of use as required. These members 20 may have sockets in the ends 21 for reception of extension rods 22 mounting two rollers 23 between which the hose pipe 19 is guided and supported during reeling on and off the reel. In the position of use as seen at Fig. 1 the said hose pipe supports 20 are maintained in an approximately horizontal plane by means of a bracket (not shown) extending outwardly from the said uprights 7.

Either or both reels 9 can be supplied with liquid, when the pump 3 is working, by control of the cocks 24. In use the unwinding of the hoses 19 rotates the reels to the required extent, the hoses passing between the rollers 23 on the support members 20, thus keeping the hoses free of the tractor and assisting the spraying attendants indicated at 25. The pump 3 may be started at any time and the supply of spraying liquid to the axle 6 may be stopped by a cock 24, or if the latter is open distribution of the liquid may be stopped at the nozzle end of the hose. As the case may be, the spraying liquid entering the hollow axle 6 passes via the hole 17 into the pocket 16, and thence through the hose stump 18 and hose pipe 19; as this occurs the leak-proof joints 11 are effective to ensure that practically no liquid escapes at the exterior of the axle 6. It will be observed with reference to Fig. 1 that the tractor sprayer can be brought to the required site, e.g. a tea plantation or a pest infested area, and spraying operations can be conducted over a substantial area without fatigue on the part of the attendants. After the work is done, the reels are simply rotated for winding on the hose pipes.

A tractor provided with the spraying equipment above described, can also be employed for spraying through spraying booms, as for example, described in our Specification No. 759,626. For this purpose, spraying booms to be fastened in angularly movable sockets 36 (Fig. 1) can be supplied via the hoses 26a by the pump 3. Provision is also made for filling several so-called "knap-sack" type tanks 27 from the tank 2 (when the spraying reels are not in use). For this purpose, the rear of the tractor 1 is provided with a pipe 28 having several cock controlled nozzles 29 for coupling to unions on hoses 30 related to the batteries

27. The pipe 28 may be connected by a pipe 31 to one of the pipes 4, 5 supplying the axle 6 and the spraying liquid is directed as required by opening or closing the cocks 24 or a cock 32 related to the pipe 28.

It will be appreciated that while the invention has been described as applied to a conventional tractor, it can be also applied to a trailer vehicle which would be fitted with a power driven pump for pumping the liquid from the tank. It is remarked that while the tubular axle 6 mounting the rotary reels 9 is most conveniently arranged above the tank at a middle position thereof, the invention is not to be regarded as being restricted to this particular position, since the hoses can be reeled off and on an axle arranged at another position such as at a side, front or rear position of the tank or vehicle. Obviously, the middle overhead position is preferred since when unwinding the hose the latter is unlikely to foul the tractor or trailer.

What we claim is:—

1. A liquid spraying machine of the kind referred to, comprising a vehicle mounting a storage tank, a pump arranged to pump liquid from the tank, a hose reel having a hub which is rotatably mounted on a tubular axle arranged, preferably, above the tank and in communication with the output side of said pump, the said axle having an outlet communicating with the bore of said hub, and a hose pipe connection on said hub.

2. A spraying machine according to Claim 1, wherein the axle is supported on a horizontal axis above the tank and mounts independent coaxial hose reels each of which is in separate communication with the pump.

3. A spraying machine according to Claim 2, wherein the bore of each hub is provided intermediate its ends with an annular pocket arranged to form a bath, this pocket being in communication with the hose connection.

4. A spraying machine according to Claim 2 or Claim 3, wherein the axle is supported by uprights arranged fore and aft of the tank.

5. A spraying machine according to any of the preceding claims, wherein the sides of the reel or reels have a plug and socket connection with the ends of its hub, leak-proof packing means being arranged between each plug and socket connection.

6. A spraying machine according to any of the preceding claims, and provided with supports which are directed laterally of the vehicle and having rollers between which the hose is guided and supported.

7. A spraying machine according to any of the preceding claims, in combination with a pipe arranged at the rear of the machine

provided with several cock controlled nozzles for coupling to hose unions.

8. A spraying machine according to any of the preceding claims, wherein the rear of the machine is provided with sockets for the reception of spraying booms.

9. A spraying machine of the kind referred to, and provided with a hollow axle mounting hose reels, substantially as des-

cribed with reference to, or as illustrated by, the accompanying drawing.

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# PROVISIONAL SPECIFICATION.

## Improvements relating to Liquid Spraying Machines.

We, **FOUR OAKS SPRAYING MACHINE COMPANY LIMITED**, a Registered British Company, of Four Oaks Works, Belwell Lane, Sutton Coldfield, Warwickshire, do hereby declare this invention to be described in the following statement:—

This invention relates to a liquid spraying machine of the type in which a storage tank, mounted on a tractor vehicle or a trailer to be coupled to a tractor vehicle, has a pump, adapted to be driven by a power take-off from the vehicle in order that the liquid can be dispensed through spraying means. Such a machine can be used for agricultural, horticultural, pest control, and lime washing purposes.

The object of the present invention is to provide such a machine with compact, simple and inexpensive means by which spraying operations can be conducted with ease at places remote from the machine.

According to the present invention in a liquid spraying machine of the kind referred to, a hose reel is rotatably mounted by its hub on a tubular axle arranged overhead of the tank and in communication with the output side of the pump, and the axle has an outlet communicating with a boring in the hub which leads to a hose pipe connection on the exterior of the hub.

Preferably, the hollow axle is supported on a horizontal axis and mounts two independent coaxial hose reels each of which is in separate communication with the pump. In either case the hub is rotatably mounted in a leak-proof manner on the hollow axle.

According to a form of construction, a tubular axle is supported above the tank on a horizontal axis by uprights rigidly ascending from opposite sides of the tank. The respective ends of the axle are in communication, by means of upright pipes, with the output side of a pump adapted to be driven by a power take-off from a tractor vehicle mounting the tank. Two hose reels are mounted coaxially on the hollow axle by means of their hubs. The bore of each hub is provided intermediate of its ends with an annular pocket adapted to form a bath, and the said ends provide the axle bearings of the reel. This pocket is in communication

with an outlet hole in the wall of the tubular axle and the exterior of the hub has a tubular stump for connection to an end of a hose to be wound on and off the reel. The respective ends of the hub are fitted with leak-proof glands. Rotatably mounted on the ends of the tubular axle are members adapted to form hose supports, these members being capable of being brought into and out of use as required. Each member may consist of a tube provided at one end with a sleeve rotatably engaging the axle so as to be movable into fore or aft positions dependent upon the position at which reeling off or reeling on will take place. These members may be rods having socketed ends for reception of extension rods mounting rollers between which the hose is guided and supported. In the position of use, the said hose supports are maintained in an approximately horizontal plane by means of brackets extending from the said uprights.

The machine above described may also be provided with a cock controlled spraying boom and also with one or more cock controlled nozzles for coupling to unions of hoses for use in charging knap-sack batteries with liquid; the nozzles may be spacially arranged on a pipe, located at one side of the tank, and connected to a lower end of a supply pipe which communicates with the hollow axle. By providing the nozzle pipe and the supply pipe with suitable cocks, the supply of liquids either to the axle or the nozzle pipe can be controlled.

The boom, which may be arranged above the nozzle pipe on the same side of the tank is also connected to the pump and provided with a cock. When the tank is charged and the pump is driven, liquid can be discharged through the hose to one or both reels, via the hollow axle, the reel-hub and the tubular stump thereof and the hose can be reeled in and off during spraying operations as required.

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Fig. 1.

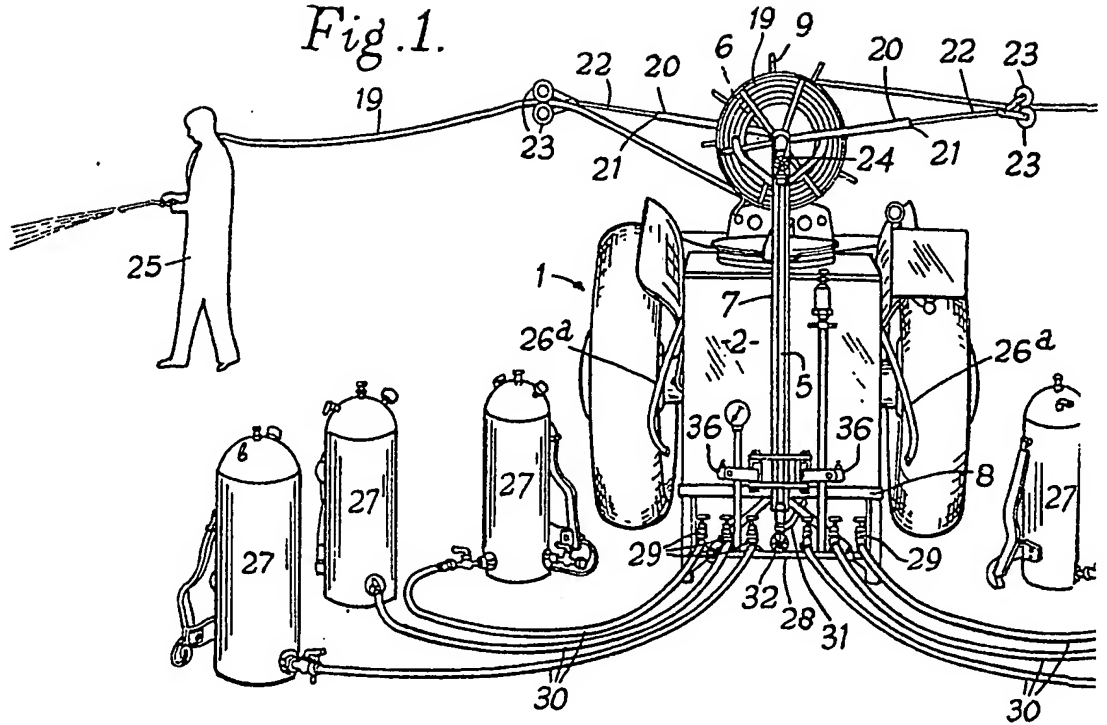
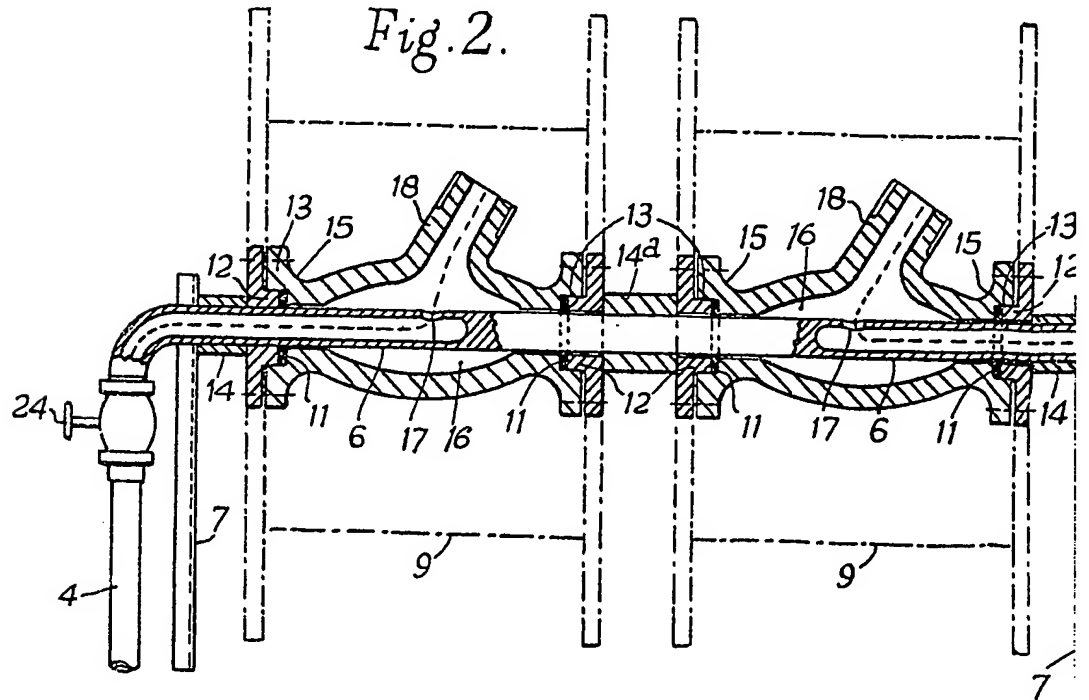


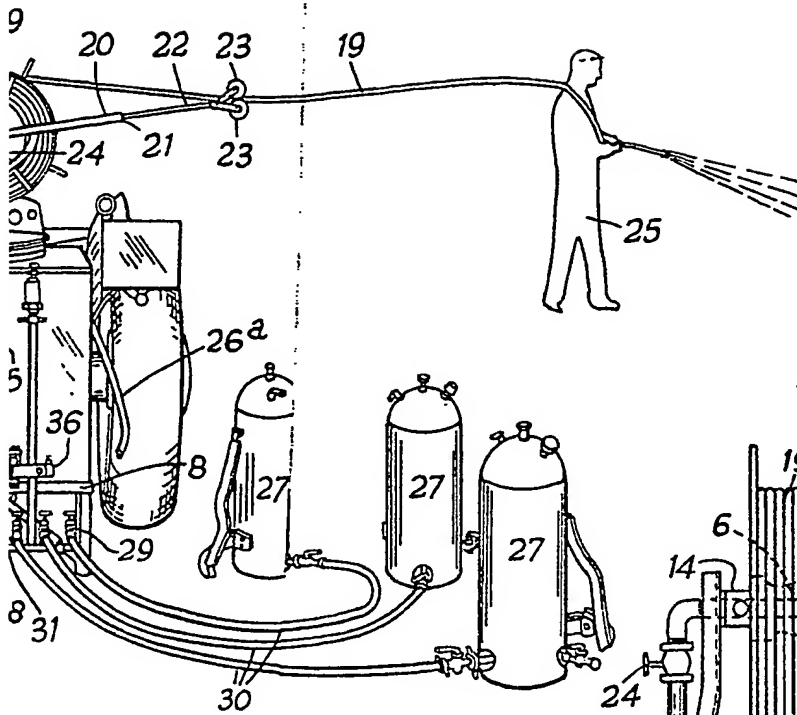
Fig. 2.



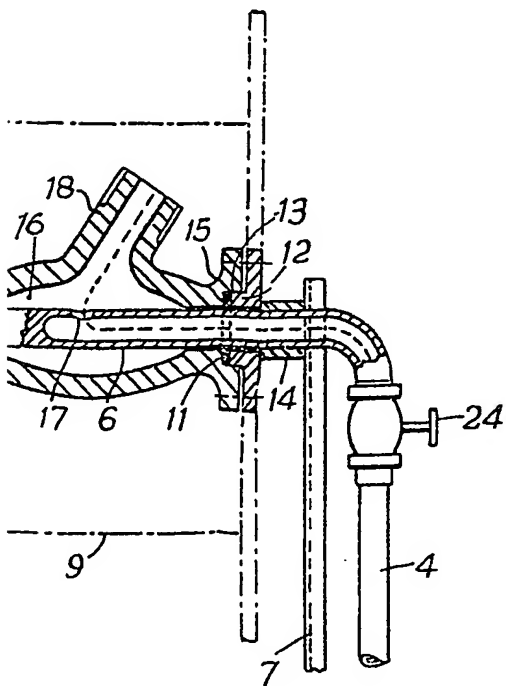
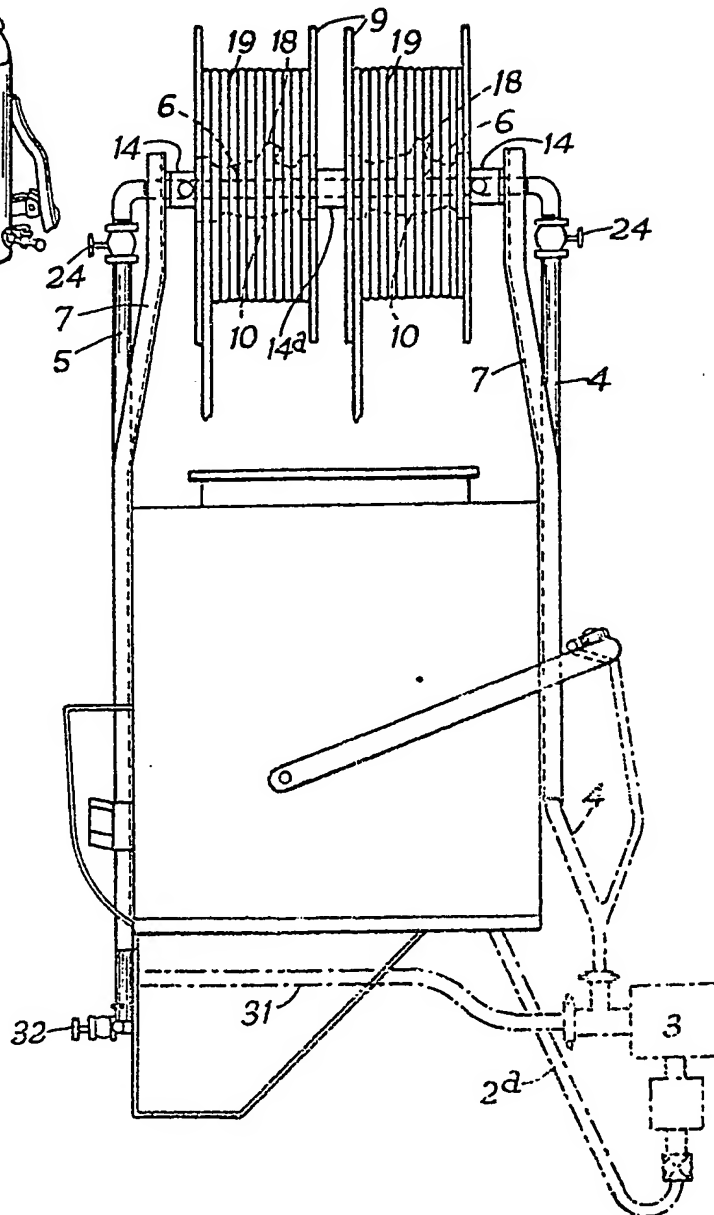
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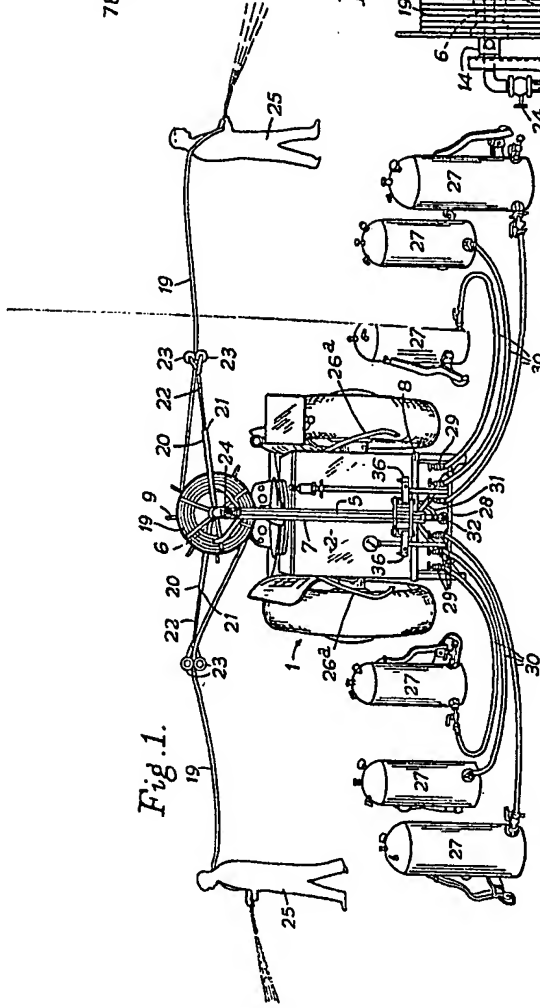
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*This drawing is a reproduction of  
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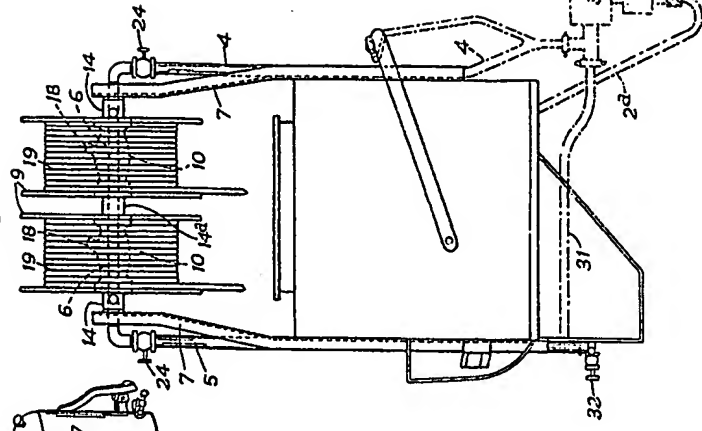


*Fig. 3.*

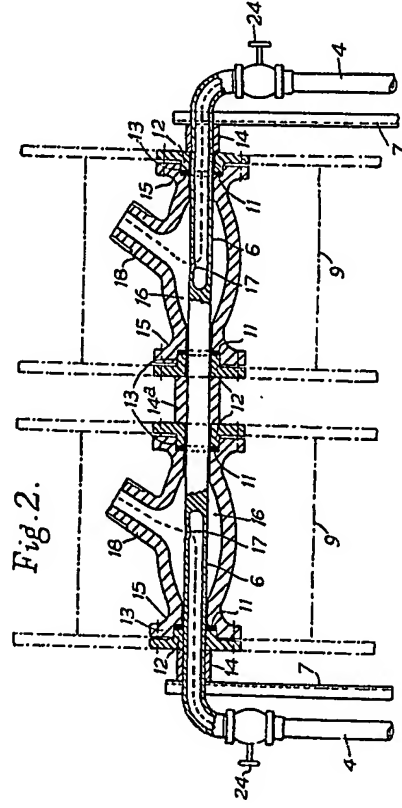




**Fig. 3.**



**Fig. 2.**



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